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GREATER TORONTO EDITION
JANUARY 2003

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Cover Story: 15th Anniversary
Lab Tests: Digital Cameras, Accessories
Mail-order deadline: February, Feb. 29, 2003
Subscription begins: February, Jan. 12, 2003

March 2003

Cover Story: The New Digital Home
Lab Tests: Colour printers
Mail-order deadline: Wednesday, Jan. 29, 2003
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April 2003

Cover Story: Digital Video
Lab Tests: Mobile Connectivity
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Resetting the bar



FROM THE
EDITOR

In an office supply store that came in the morning newspaper, Palm's new "Tungsten T" (arguably the best Palm ever) is listed for a few cents shy of \$400. A page later, Compaq's mid-range (yet still 3056 Pocket PC is advertised for \$654.

In looking at these prices, I can't help but think back to a news conference I attended a couple of weeks earlier. Anthony Bonadero, Dell Computer's director of worldwide mobile products, stood up and basically said handhelds are very overpriced. Bonadero was, of course, just setting us up for the punch line: Dell is getting into the Pocket PC handheld business and pricing will be a key strategy. When Dell talks about competitive pricing, other computer vendors get nervous, and a line to Bonadero's slide presentation that was written in bold red will surely make handheld vendors squirm: "significantly undercuts current PPC Pricing."

He then posed several examples of the Acer 33c line. They didn't seem like bargain basement devices at all. TTF colour screen, the very current Intel XScale processor, and Windows Pocket PC 2002. So, what does "significantly undercuts" mean to Dell? When I wrote this, Dell Canada's Web site listed the entry-level 300c Mini-Axe for \$436 (\$379 if you forgo the cradle for a plain USB sync cable) and \$349 for the 430c Mini-Axe. Plus Dell is offering an \$180 mail-in rebate, so the effective price is as low as \$169.

I admit my bias to the Palm OS, but when faced with a more than two-to-one price difference on the latest technology both platforms have to offer, I have to pause. And that's exactly what Dell wants anyone in the market for a new handheld computer to do. Palm may still go with Palm, but they'll be a downshift, or if they have to pay twice as much—after all, Palm's are typically cheaper

than Pocket PC devices. On the Pocket PC side, where models from various vendors are functionally similar, price differences will be a significant factor. I expect the next few quarters in the handheld sector will be bloody.

Resetting the bar Part 2

Going from little platforms to big, another development is to shake up the personal computing landscape is the introduction by Intel of Hyper-Threading (HT). In its latest Pentium 4 processor, Intel has put an extra core on the latest 3.06 GHz processor, which allows it to execute tasks in parallel. A thread-aware OS like Windows XP will think it now has two CPUs at its disposal and will distribute the work to account for that. The net result, according to Intel, is a performance boost of up to 25 percent.

However, it's not just a boost in straight-line performance. HT will also change the nature of how you do things on your computer. The catch phrase Doug Cooper, head of Canada country manager, used to describe it was "performance beyond megahertz." He said business would benefit naturally, and give the example of cooking a meal, where a lot of sub activities need to be done simultaneously. He ran up to this point, desktop processors have executed instructions sequentially. The multitasking we enjoy is because the single processor is fast enough to time-share the tasks at hand. However, this becomes down when you have two processes intensive tasks competing for CPU time, for example, listening a CD while playing a game.

At an event to announce the new processor, Intel of Canada demonstrated how this works by running the same application sets on two

identical systems, but with HT turned off on one. In the computer with HT disabled, CD writing was put on hold for as long as the game was played. On the system with HT enabled, the CD recording was completed without a break in the game play. Cooper ran through a few scenarios of the types of performance boost HT gives with a mix of business and recreational applications.

Intel sent us a sample of the processor prior to the official announcement, so we were able to test the performance ourselves. TCP Lab Editor, Sean Connolly, notes that the performance increase is real, although our benchmark suite didn't show a 25 percent boost.

Still, the foundation for future desktop computing has been laid. Cooper said Moore's Law is still accurately predicting the CPU's advance, with 10 GHz processors likely by the end of the decade. He also and there was no theoretical reason why the number of cores on the CPU could not be increased. So, the real measure of performance will shift from how fast the CPU clock is, to how many processes it can handle in parallel.

Best of the season

On behalf of everyone at The Computer Paper, thanks for the support you've given us during the year past. Best wishes for the holiday season, and may we all share in a prosperous, safe, and sane new year.

David Tienkiss, Editor



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I can see less

Thanks for that article in the November issue called "I can see I can see!" I have long felt that the needs of computer users have largely been ignored by the system's producers. Why is it so difficult for an optometrist or ophthalmologist to adjust a prescription to meet a customer's specific needs? It's not rocket science!



BOAGS LETTERS
small
interviews

Portfolio a movie star

The portfolio was a great Atari product (see "Letter from the Editor," SEP December). I wish I had purchased one at the last Atari show in Toronto back in '92. Just a note of interest, the boy John in Terminator 2 used an Atari Portfolio to break into the ATM machine and access the security card entrance in the lab where the terminator was and chip was stored.

Michael De Jong

'Perfect' depends on point of view

The "perfect handheld" (see "Letter from the Editor," SEP December) does not exist

because of politics, plain and simple. Besides the political issues, people may disagree as to what the perfect handheld is. I feel the most important part of a computer is memory and storage capacity.

Current high-capacity MP3 players have enough capacity to act as desktop replacements (for a 440 or 4800 anyway). For example, the Apple iPod has a least 5 GB of disk space, as well as 32 MB of RAM (cache). The performance needed to decode MP3 files means the computer has the processing power to run most two-band (and some graphics) programs without difficulty. A PDA with compatible specifications cuts twice as much.

There are two main obstacles to using an MP3 player as a computer: limited input and output, which can be resolved by tweaking the USB port. But the fact is, the companies selling these high-capacity MP3 players refuse to release the specifications required to install your own OS. Products I specifically asked about include Apple's iPod, Archos' Multimedia Jukebox, Diamond's Rio 540, and Toshiba's ADO645 Portable Digital Audio Player (Sagebrush in Japan). The answer was always "no."

With an MP3 player running Linux (possibly using mouse-code input), you would be able to log in "remotely" through the USB port using a USB-enabled adapter and

PLP. This would mean you can take advantage of the large screen offered by the Atari Portfolio you mention, or a legacy laptop when needed. When all is said and done, I guess I'm really looking for the perfect substitute.

James Phillips

Fiddling for compatibility

In his article, "Is true compatibility achievable?" (SEP, September), Allen G. Silberstein indicated that WordPerfect 7.0 will not operate under Windows XP. I decided to try anyway. With the help of the Windows XP compatibility wizard, I was able to run the installation program for the Corel WordPerfect Suite 7, and installed WordPerfect 7. However, every time I tried using WordPerfect 7, I saw an error message, and the program shut down.

On the other hand, I noticed no problems installing and running Corel WordPerfect 6.5 under Windows XP. I also installed the Novell version of WordPerfect 6.5 without problems, but to avoid error messages, I changed its properties so it ran in Windows 95 compatibility mode.

David Mason

Mea culpa

In the December 2002 issue's Lab Test report, you failed to even mention that the

Toshiba e740 is the only Pocket PC with integrated 802.11b. This means that out of the box, a customer will have complete WiFi compliance and connectivity without purchasing any adapters or accessories. However, you listed the price as a negative. The e740 is the most feature-rich Pocket PC in the market at \$849. \$849 150, dual CF and SD slots, removable battery all in a small form factor with no need for expansion ports.

Jason Laumann

TOP update: Guilty as charged. We must have been sleeping when we edited that part. We've found that old-in MP3 code in the CF format will cost a few hundred dollars, so adding that to the basic cost of a Pocket PC makes the Toshiba unit's price considerably more competitive.

Correction

A review of the R5ound RP-201 ("Holding sounds: digital audio files," SEP December) incorrectly stated that the device comes with an AC power adapter. According to the Canadian distributor, Rayound (jowadac.com), "The RP201 can be installed in the tower; connection wires are supplied. For exterior use a 9-Volt battery or a power adapter can be used, but neither is supplied." □

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WHAT'S NEW

By TLP Staff

When a company says its new product is ideal for architects, designers, and engineers, certain details are immediately clear. First, it must have a lot of white design types can't get enough of—speed and storage. Second, it's expensive. Fujitsu's (www.fujitsu.com) new Celsius Mobile M notebook follows this pattern faithfully.

The computer comes standard with a 3.0 GHz Intel Pentium 4 Processor-M, a 60 GB hard drive, up to 5GB of RAM-SDRAM, an Nvidia GeForce 4 560 Go GL graphics



accelerator, and a DVD/CD-RW drive, for a start.

But the eye-popping feature is the Bluetooth-enabled keyboard, which can

be removed from the unit and used from a distance.

Rarely going with the power user crowd will set you back at least \$5,599, which includes a three-year limited warranty with round-the-clock tech support. While the data on the device is protected with encryption and an integrated fingerprint scanner, handsets to attach the case to the user's wrist are sold separately.

Those who always operate on a need-to-know (now) basis may be interested to learn that Copernic (www.copernic.com) is peddling its latest fix for information junkies. Copernic Agent 6.0, the company's integrated search software, is designed to help users manage, analyze, and track information on the Web.

The software comes in three versions: Basic, Personal, and Professional, all of which can be downloaded from the company's Web site. The Basic version is free, and allows users to search over 40 search engines and information sources simultaneously, with up to 3,000 possible results.

Spotlight



9.2 megapixel LCD

For most people, attention to detail is important. For some people, it's critically important. For the professional of the latter whose critical eye is on a screen, VistaScreen (www.vistascreen.com) has come up with the VistaScreen 4.22 21-inch LCD, complete with 1,660x1,400 QXGA resolution. The display has a density of 206 pixels per inch—10 times that of typical LCDs on display—and presents photo-real images, according to VistaScreen, which boasts that this is the highest resolution currently available.

The monitor comes in an extended street price of \$12,779, but buyers should be aware that it's not for the faint of pocketbook. Not that any one would want to pass this one up, only that it's not a standard and expected buy. Viewers, the ATI Fire GLA and the Nvidia 8500, for PC's, and the ATI Radeon 9550 for Mac. Prices on these cards are a fine around \$55,000 for the Fire GLA, as cheap as up and check for the comparable cards to be added to the www.itsc.com site. VistaScreen

Spotlight

Digital pen a tablet alternative

Finally, someone has provided a solution for all those unfortunate students who lose their homework to hungry dogs. The new in Personal Digital Pen from Logitech (www.logitech.com), captures and stores up to 40 pages of handwritten information, which users can download to their PCs via an included USB cable according to the company.

Logitech says the in Pen is based on technology from *Pen-to-Go* (www.pen-to-go.com), which is a combination of a small digital camera in the pen and specially designed "digital paper." The paper is printed with tiny dots in a special pattern that helps the pen keep track of where it is on the page. The pen records the dot pattern the camera picks up and it then is able to reproduce the drawn images, handwriting on the computer screen, with



the help of accompanying software. In the end, users have both the paper and its record, and the digital backup copy.

The package includes the in Pen, a USB cable that also charges the pen's battery, Logitech's Software, an AC adapter, five ink refills, and a Head Cambridge Digital Notebook. It's priced at \$53.99 and is currently only available to select U.S. Web sites (see www.logitech.com/shopping...). Of course, you'll eventually want more paper. Logitech is selling the Head Cambridge notebooks for \$49.99 and the Pen-to-Go notebooks for \$55.99. The pen, and presumably the USB, is expected to hit Canadian retail stores in the spring. Meanwhile, perhaps some dose of efficiency classes will help keep your homework safe.



The Personal version (\$529.95) increases the number of available information sources to over 1,000 and the number of results to 5,000, and includes tools to customize search categories and filter results, as well as the ability to integrate the software with Microsoft's Office 2000 and XP applications.

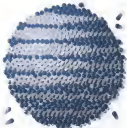
The Professional version (\$529.95) allows unlimited search results, and in addition to the Personal version features, includes Web page analysis tools that, for example, can extract and summarize key concepts from a page. The Professional version also allows users to monitor Web pages for changes or updates, according to Copernic.

Most people who have used handheld headsets with their mobile phones have experience with the lesser-known meaning of the words "dropped call," which involves a failure of the earpiece to remain in the user's ear for the duration of the conversation. Now

Logitech (www.logitech.com) has designed a line of headsets to address the problem. The ClearLine line comprises four different over-ear headsets and two over-the-ear headsets, which range in price from \$53.99 to \$159.99.

The earbud sets use what Logitech calls a **FlexLoop** design, essentially soft rubber gels that fit into the outer ear to hold the earbud in place. The FlexLoops come in four sizes, so users can choose the most comfortable.

The headsets work with most popular mobile phones on the market, according to Logitech, including Nokia, Sony-Ericsson, and all standard 2.5-mm jack phones.



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Sherlock Holmes meets data

TCP takes a peek into the world of computer forensic examination

By Dave Chappelle

Volunteers tracked down an individual tracing child pornography online and notified the FBI, who discovered it was a juvenile living in Pennsylvania. The case was turned over to state authorities, but not before an FBI agent had unsuccessfully attempted to contact the juvenile's parents, and left his business card in the door. The mother came home, found the card, called the FBI, and wanted them and state police to talk with her son the next day.

That night the son deleted his hard drive partition and reinstalled the operating system. Short of sending the drive to a full-fledged data recovery lab, the evidence was gone. However, because of the timeline of the traded images, his IP address, and his partition deletion, a case could still have been made against him—especially for wilfully destroying evidence. Forensiting and partitioning a drive establishes a "consciousness of guilt," says Mike McInnis, supervisor of the Pennsylvania State Police computer crime unit.

The police decided not to go to the considerable expense of pursuing this particular case, but had they chosen to, they would have an arsenal of tools at their disposal. Welcome to the world of computer forensics.

In addition to law enforcement work, McInnis is an instructor with Guidance Software (www.guidance.com), which has developed a powerful Windows-based computer forensics application called *Encase*. Guidance Software is a



"You're getting insights into someone's true being. People do things on their computers they'd never do elsewhere."

device "skirted in a garage" (by a police officer) success story that now has more than 100 employees. Along with selling the software, it trains forensic examiners, and many police officers, including some from Canadian policing agencies, have gone through the training.

Guidance Software defines computer forensics as the acquisition, preservation, and analysis of digital information that meets the requirements of evidence for court presentation. Digital evidence can come from many sources, including

a hard or floppy disk, USB drive, CompactFlash or SmartMedia cards, CD-ROMs, or any other data storage media.

The forensic process includes three stages: processing a case, obtaining evidence, and storing that evidence. In our legal system, rules of evidence are fairly strict, and it must meet a certain standard before it can be presented in court.

For example, it's a lot more complicated than simply snooping around a suspect's drive using Windows Explorer.

Simply booting a Windows computer shows data and time stamps and the contents of the *Recent* and *Temporary* folders. In short, even the boot process and opening of Windows Explorer changes the contents of the drive, potentially undermining the integrity of evidence police may be trying to gather. If the files have been changed too much, it may not be admissible in court.

Preserving evidence for examination requires special software and techniques. TOC-based utilities used to be popular, but are limited in function and require a lot of time to be used effectively. This is where *Encase* has established its following, being faster and more capable than the older tools.

Computers hold evidence better than filing cabinets, because while a paper document can be easily shredded, deleting a document from a computer disk merely deletes the file header. The file can still be located with the right tools.

"The data is there until it is overwritten," says Tony Willis, a detective with the Los Angeles Police Department's computer crime unit and part-time *Encase* instructor. "As suspect can upgrade a computer, format his old drive, and give it to his kids. If the kids haven't overwritten the original data, it's still there."

Willis says his jurisdiction includes Los Angeles International Airport, a hotbed of laptop theft, and *Encase* is routinely used to recover them. Officers visit local pawnshops and run the software on laptops for sale. Unlocated drives often reveal residue of an old OS.

Continued on page 14

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Shorlock Holmes meets data

Continued from page 12
(and previous ones as well).

Tales from the computer forensic front

The chairman lip off

An individual in Ontario was chatting online with someone in Pennsylvania during school lunch hour. Gates asked a bank in the Pennsylvania school were made during this chat. The Italian notified RCMP, who notified Pennsylvania State Police, who raced to the school before classes let out for the day. To determine who made the bomb threat, all students were detained while all library computers were forensically searched and the validity of the threat ascertained.

Dignified employee

Much computer crime involves disgruntled employees stealing trade secrets or customer contacts and erasing data from an employer's systems. Terry Willis, a detective with the Los Angeles Police Department, recounts a slightly different case in which an art gallery employee set up a Yahoo account in the name of the employer, then used the account from home to email ad clients a notice that the gallery was going out of business and to ignore the invitation to the next show.

A gallery rep admin discovered evidence of the Yahoo account creation. Under a search warrant LAPD officers used Encase to preview Note to see the incriminating email, to the suspect's home. She received 90 days in jail and three years probation, and her future

Escalating out and move

Because courts around the world have accepted Encase as a standard, commercial quality forensic software applica-

ways were purchased to cover the less of business to the gallery.

Building an airtight case

Confederate files from computers often form only a portion of that necessary for an arrest. Investigators filter the task of case-building to gathering enough threads to make cable strong enough to prosecute an offender.

Mike McNeill, supervisor of the Pennsylvania State Police computer crime unit, recounts the case of finding the body of a woman in her 20s, found wrapped in a carpet in a garbage dump. Regular investigation found that the woman's boyfriend had a company van and laptop. Wrecking carpet fibers were found in the van, but that wasn't enough. Further investigation showed her to be a frequent visitor to numerous astrology sites, some of which required a password. Using Encase to search the laptop, investigators found pages from astrology sites in the temp and cache folders, accessed within four hours of the estimated time of death. When the boyfriend couldn't provide the site passwords, the fibers and evidence that she had used his laptop so close to the time of her death helped convict him of first-degree murder.

Email trail

An individual's email is where police are

most likely to find an admission of guilt, or indication that a crime has been committed. Few people are aware of email encryption tools, and fewer still can be bothered using them.

LAPD established a motive for murder by searching a man's email after the bodies of his wife and daughter were found in Los Angeles Harbor. Investigators found an email from the man to another woman living outside the country, stating that a "new life" could be started once the "old life" was gone.

Timing is everything
Windows' Recent and Temporary Internet Folders are good places to look for the last actions performed on a system.

A 4:30 a.m. call to a Pennsylvania 911 operator involved a juvenile who had been stabbed in the head at his home. He told police his father had done it, but both parents denied it. Responding officers noticed an active connection on the home PC, and called the computer crime unit. From an activity timeline, an investigator concluded someone had been using the computer to view child pornography until roughly 15 minutes before the 911 call. It turned out the son had refused his father's demands to mimic what he had been viewing online, so the father stabbed him.

—Dave Chappell

making training important—and is also the reason why Guidance Software has an extensive and busy training facility in California.

Instructors are full time law enforcement officers who take their vacations to teach. They are also very experienced with Encase, having used it to collect evidence and present testimony in court.

The opportunity to connect child pornography and other criminals is a major motivation for forensic examiners. What else attracts people to the world of computer forensics?

"It sounds corny, but you're getting insights into someone's true being. People do things on their computers they'd never do elsewhere," says Mike Fowler, a senior corporate instructor with Guidance Software. Fowler also has 14 years experience in law enforcement, and several months in private-sector network security. "It borders on voyeurism, because you're looking at a portion of someone's life they figure no one else will ever see."

Most investigators involve files that a user thinks no longer matter. Recycle bin unallocated clusters can still contain data, even after a drive has been reformatted. On conducting users with evidence of suspicious files, investigators say they are frequently told that someone must have put the incriminating files on their system, or that the OS put them there.

However, those trained in forensics know better. "Stuff in the recycle bin is only put there by the user, not the OS,"

Continued on page 10

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that) wouldn't let me disable the VirusScan option. Since there was no message that my current setup would remain unaltered, I backed out of the setup program, uninstalled VirusScan, reinstalled Internet Security (which now let me disable the VirusScan option), then went back and installed the latest VirusScan. Difficult? Hardly. A painless irritant? You betcha.

After installation, both suites collected everything into an easily accessible con-

trol panel. Another point for Symantec on one system I was already running SystemWorks, and I ended up with one combined control panel that was easy to navigate without oversteering. (I admit that it isn't really a fair test since I wasn't integrating two suites on the McAfee side, but I have to give Symantec credit for putting together the two packages' new rules and their associated programs so well.)

Beyond that, there are quite a few sim-


ilarities between the two packages. Norton AntiVirus and McAfee VirusScan both run silently in the background, with some in the system tray for easy access. Both catch virus-infected files while you work, including email messages like Kims and malicious scripts. As an extra precaution, Norton AntiVirus also scans outgoing email.

The two firewall programs are also similar; both have basic ports (McAfee Firewall has three and Norton Personal

Firewall four) that work well enough on their own, but in either case you'd do well to spend a few extra moments tweaking the settings to exactly what your system needs and how the program interacts with your software. For instance, if you're using an 800-110 network, you'd want to make sure the firewall won't block legitimate traffic from your other computers, but keep unauthorized users out. Most importantly, you'd want to

Continued on page 25

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A week at forensics school

Much of the research and innovation for "Sherlock Holmes" movie deals "came" during writer Steve Chappelle's week at Glendora Software's training facility in California. Following a report about the detective's experience:

By Steve Chappelle

Our class was composed of 19 men and four women. The majority were from law enforcement agencies, but others worked in fields like private sector risk assessment, law firms, or network system administrators. Some would admit only that they work for a national government. At least one California detective wore a holstered handgun, and admitted he had another in his pocket.

The Glendora Software classroom setup is pretty modular: a whiteboard, instructors' desks and computers at the front, and three columns of student desks. Students sit two to a desk, and each student has a PC and laptop.

Forensic Review	
Case	Brilliant
Case file	Ex-Case file with "case" extension contains information specific to one case, with pointers to evidence, background, search results, facts, and signature analysis reports.
Checklist	A computerizable, stored along with data, to direct completion of this data.
CHK	Checklist/Inventory Check, a variation of the checklist that is wider spectrum. Data strings, URLs and files will produce the same checklist, but not the same CHK.
Endnote	Case file with "end" extension is a high-level programming language between law and C that works data from the case.
Examine file	Central component of Ex-Case methodology that contains a header, checklist, and data blocks that will together to provide a secure and self-checking description of the state of a computer disk at time of checking.
GUI	Shift searchability requires syntax used to describe search terms to produce specific matches.
Hash	A value calculated by algorithm to verify data integrity.
Header	Provides information about the file.
MD5 Hash	Message Digest 5 Hash
Partition	A portion of a hard drive. Drives need be partitioned before formatting and installing an operating system.
Signature	In Ex-Case, the combination of a file header, file extension, and file type. All three must match or the file may have been deliberately changed.
Temp or trash file	Where temporary files used by Ex-Case during examination are stored.

monitors. In between the pairs of student monitors is another flat panel, which displays the instructor's computer.

Three monitors show the room simultaneously rotating roles: one gives the lesson, while the other two help stu-

dents. Since the introductory course was for people with no computer experience, I attended the intermediate class. Classes begin at 8:00 a.m. and run until 5:30 p.m., with an hour for lunch and 10-minute breaks every hour.

The intermediate course was fairly fast-paced. While the instructor talked, he demonstrated the technique, navigating around the program with the speed and efficiency of a practiced user. It was easy to miss a step by taking your eyes off what he was doing.

I was surrounded by experienced forensic law enforcement professionals and system administrators who appeared to readily absorb information that was completely new to me. By the afternoon of the second day some, including me, were lost. Thankfully, the instructors helped us catch up. It was frustrating, as we're used to being the knowledgeable computer professionals.

Despite a tremendous amount of help and encouragement from instructors, it

Continued on page 53

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A week at forensic school

Continued from page 25

was an extremely humbling experience: at times painfully reminiscent of days spent sitting in a college calculus class trying to figure out what was going on.

What we learned (that we can tell)

There's more to gathering evidence than one might first imagine. An investigator must decide how much surveillance to perform, and then decide between covert and search, or search and seizure. The search warrant must be worded carefully.

Then comes questions of strategy: How many people are necessary to perform the search? Will outside specialists vested in a particular operating system or hardware be required? How will the connection between the suspect drive and the forensic drive be made?

Everything in the forensic investigation must be documented. If an investigator simply connects a forensic computer to a suspect computer, who is to say there isn't another hard disk inside the suspect system that is only used for illegal activity?

We learned that for each case it's good practice to begin by creating new Case, Evidence, Temp or Trash, and Export files on a separate logical drive on your forensic computer.

We opened a new case file and imported the contents of the disk to be analyzed. Guidance Software's Encase application archives this in the evidence file. In verify integrity, every 64-sector (32 KiB) data block receives a CRC value.

When the software acquires a physical or logical volume it calculates an MD5 hash value, which is written into the evidence file and becomes part of the evidence documentation. The hash value can be compared every time an evidence file is added to a case, to verify the evidence file has not changed.

How to deal with erased media is included in the program, as is how to safeguard against inadvertently destroying potential evidence. To demonstrate the recovery power of Encase, the class wiped floppy disks completely clean and then restored and verified the entire contents. The contrasts of USB drives, Compact Flash cards, and Palm PDAs were also analyzed. Deleted files can be

recovered and deleted partitions rebuilt, provided the data has not been overwritten.

The user interface of Encase is a series of panes. The right pane includes Table, Gallery, Timeline, and Report views. By gathering and sorting, a table is composed, images are viewed in Gallery, an evidence Timeline is established, and a Report of the findings generated. Reports are fully customizable. Filters in Encaserts also show up in the right pane. Filters manipulate the view when looking at files or folders.

Forensic investigators don't always have time to decide what is or isn't pertinent, so they bring up images on a drive into the Gallery mode and let a view-updated investigator decide. Other images are flagged as illegal, the forensic technician can print them out and include header and file info.

The left-pane views offer Case, Bookmarks, and Keyword. Different case files can be opened at the same time.

In the bottom pane are views for "Get, Hex, Report, Picture, Disk, and Evidence Files, various properties of the disk or subject media are displayed in

whatever view the operator decides.

Encase is a thorough and deep program that requires a lot of study. As Encase instructor Mike Fowler says, "Now that my focus is on instructing, it hurts me to think of what I missed as an investigator. The functionality was there. I just wasn't using it. I want to make sure every student who leaves this class knows how to use the product to its fullest potential." □

WWW.

TCF=TCF=The How Stuff Works Web site is a great resource year round, but just in time for the holidays, it includes a section on Christmas. Taking the form of exploring the traditions to someone from another planet, it answers questions like: Why is there a small evergreen tree in your living room? Why are there evergreen socks hanging on your mantle? And, of course, What about these fruit cakes?

www.howstuffworks.com/christmas.htm



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CD-ROM and DVD Combo Drive
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Outside the box

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 ventral from US dollars. At base of wing, exchange rate was 1.57

Ionema H80

From: Ionema Corp., www.ionema.com
 Estimated price: \$819* (10 GB), \$407* (40 GB)
 GB (5.5in/14mm)

Pro: Ultra-compact. Modularity means drives can be used with either FireWire or USB 2.0 if you have the adapters.

Con: Mobile-format drive, so lower performance. Expensive!



- Available in 10 GB and 40 GB capacities
- Data speed 4,200 rpm
- Available for either FireWire or USB 2.0 connections, port is added to the back of drive as an adapter. Users can purchase additional adapters to use with the other connection, if desired.
- Power cord included, but not required with FireWire connections with power on the bus (longer connections require external power)
- Small window displays removable serial chargeable tag, to indicate what's on the drive. If you're using multiple drives to backup, you can label by day, for example.
- Compatible with Windows XP, OS/2, and Mac OS 9.5 and later

Once open a drive, the Zip disk was the industry standard when it came to high-capacity removable storage. Then came removable CDs, and Ionema's response was the Fireless, a 10 GB and 40 GB removable solution whose biggest selling point was its flexibility: the drive and base station were separate pieces and the FireWire or USB ports were on another piece that was interchangeable. The company has used some of the same tricks in the design of its new portable external hard drive, by keeping the ports on a separate adapter, if you buy the bundle with the FireWire adapter in the box, you can always purchase the USB 2.0 adapter separately, and vice versa.

We had a chance to look at the 40 GB FireWire version of the Ionema H80, and when we plugged it into our FireWire port, the system instantly rec-



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Continued on page 38

Outside the box

Continued from page 12

contained the drive. Because the drive contained in the compact plastic enclosure is notebook sized, running at 4,200 rpm, it's not exactly the swiftest drive out there (not at your first choice if you're planning to use the drive for streaming multimedia, like digital video), but gets the job done for general data storage if it's a great compromise.

If you're looking for higher performance, laptop-style desktop hard drives running at 5,400 rpm or 7,200 rpm, its USB 2.0 and FireWire versions, its capacities ranging from 40 GB to 120 GB.

LaCie i2 FireWire Hard DriveFrom: LaCie Corp., www.lacie.com

Estimated price: \$499 (120 GB), \$595 (200 GB), and \$699 (240 GB)

Pro Rugged construction, rack-mountable, high capacity

Con Setup may be complicated for novices

- Available in 120 GB (7,200 rpm drive model), 200 GB (7,200 rpm) and 250 GB (5,400 rpm)
- FireWire connection to PC
- Metal case protects drive, and has grooves along the sides to facilitate side-mounting (can be mounted side-by-side in a rack, or vertically)

available for putting single drive into 1U space-mounting bays; available separately for \$60.

- Compatible with Windows 98, 2000, Mac OS, and Mac OS X or later



LaCie products have long been a favorite on the desktops of content creators, professionals, thanks to the flexibility of its external storage products. Their new design is bound to make a lot of people happy: with a sturdy metal outer casing and slots along the side that can be used either for a vertical stand or to connect drives together for rack mounting.

The drive itself requires a slightly more complicated setup than most of the oth-

ers we looked at. Because LaCie is popular with both Mac and PC users, the drive comes unformatted and needs to be set up, and the small disk doesn't automate this. Instead, you'll need to get into the control panel's disk management section, if you're using Windows 2000 or XP, and manually set up a partition and start the format. Once you've completed that, you're on your way—the drive is easy to use and very speedy thanks to the fast interface and fast drive inside. (The 250 GB drive is an exception. With the slower 5,400 rpm spindle speed, it is better for applications that require storage more than lightning performance.)

Master Personal Storage 5000DVFrom: Master Corp., www.mastercorp.com

Estimated price: \$499

Pro Backup is ultra easy, both USB 2.0 and FireWire enabled; 250 GB version has highest storage capacity within size

Con 250 GB model has only 5,400 rpm drive

- 100 GB capacity for the 5000DV model. Also available in 60 GB (5000LE for \$319) and 250 GB (5000XT for \$609) capacities.
- Both FireWire and USB 2.0 (compatible with Windows 110) interface
- 7,200 rpm 250GB/33 drive model
- Master's OneTouch system makes backing up files easy—just press the button on the front of the drive to launch Data Retriever.
- Compatible with Windows 98SE, Mac 2000 RP, Mac OS X, and Linux (patch available for Linux compatibility)



Master was the first of the major hard drive manufacturers to bring out an external version of its product with the earlier introduction of its 3000 series external hard drives. The 3000 series is more than a slight update to the line. Based on what a lot of people use external storage for—backing up important data—Master made it easier than ever to do just that, simply by pushing a button on the front of the drive.

After you install the relevant software, the first time you press the button a configuration dialogue appears to help you specify what you would like backed up on your system: whether it's your docu-

ments, your applications, or both. The program, Data Retriever, is quite configurable, allowing you to back up multiple drives with the press of one button. It's quite a nice addition to the product line, especially for those who would otherwise never bother to back up their data.

The 5000 series has three different models, each with a different capacity. We did our testing with the 120 GB 7,200 rpm 5000DV model (which is both USB 2.0 and FireWire compatible). You can also get the 60 GB 7,200 rpm 5000LE (USB 2.0 and 3.0 only), or the 250 GB 5000XT, which has both USB and FireWire compatibility, but only sports a 5,400 rpm drive, which is a better choice if your space requirements outweigh your need for drive responsiveness (like with multimedia apps).

Western Digital FireWire External Hard Drive

From: Western Digital Technologies,

www.western-digital.com

Estimated price: \$589 (80 GB), \$649 (100 GB), \$699 (200 GB)

Pro FireWire offers excellent transfer speed to the PC; 200 GB model offers tons of storage

Con Slightly more expensive than other competition; setup program not fully Windows XP-compatible

- Available in capacities of 80 GB, 120 GB and 200 GB capacities
- Uses FireWire connection
- 7,200 rpm drive model
- Compatible with Windows 98SE, Mac 2000 RP, and MacOS 9.1 and later



Western Digital is the second drive manufacturer we've seen that has gone the external route. This one comes in a very sleek little container that's compact and quite attractive—and you don't have to worry about power configuration like you do with WD's external drives.

The configuration program that comes on the CD doesn't seem to work with Windows XP (despite the logo saying XP compatibility on the outside of the box). Attempting to use it to set up your external drive could cause some problems—when we tried, the operating system reported afterwards that the disk was

Continued on page 40

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Small Office Technology

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Year end for entrepreneurs

Online banking, new software takes mystery out of accounting

By Gref Whitebright

The closing of one year and the beginning of another is often a time for personal renewal and contemplation of lessons learned from the 12 months that have just passed. It's often a time for recommitment, the making of resolutions, and a well-spring of good intent.

On the business front, there are also a number of key things you are going to want to reflect on about the year, starting with answers to the questions: how much money did my business bring in (from whom and when) and how much money did my business spend (with whom and when)?

The ease with which you can find the answers to those questions will depend a great deal on just how much work you have done ahead of time. If, for example, you have invested in a comprehensive accounting system—and have kept it up to date by making sure that all expenses and income are entered into that system and properly categorized—you should be able to start answering the most vital year-end accounting questions quite quickly.

By running a quick report you should be able to see all of that information in

glorious detail, and be able to organize and analyze it. You'll be able to create amazing charts showing analysis of expenses in all kinds of categories (perhaps revealing that coats of red ink and take-out pizza are among the biggest "miscellaneous" expenses).

But let's say, for the sake of argument, you aren't quite that organized and that

your small business is small enough that it's just you and a couple of other hard-working people keeping it afloat.

Let technology help you catch up

The good news is that even if your formal accounting is pretty poor, technology is in a position to help you get a lot of

Continued on page 62

Using macros to simplify your life

By Kerry Dawson

There seems no end to the capabilities of modern life. Though it would be responsible for many of us to live without our trusty PC, it has actually added to our range of activities. Many of us now spend a good part of the day sitting at our computers, searching for information, analyzing it, replying to email and even chatting with friends and work colleagues online.

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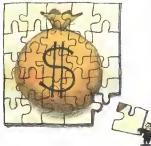
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One utility group that is often overlooked and underused but can actually simplify computing life is the macro. A macro utility records keystrokes and plays them back at the stroke of a key sequence or press of a button, or can be used to produce more powerful custom-written scripts.

The end result is that repeated tasks become easy through automation. For

Continued on page 51



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Share photos with PowerPoint



choice, though, in both PowerPoint 2000 and 2002 can be used to create photo albums from a series of images. You can add text to the page, and headings, and create wonderful presentations from your slides when anyone can view.

This month we'll look at how to use PowerPoint to create an album to share photos of the kids, vacations, and other family events. We'll also tell you how to add to the album over time. As a plus, like any PowerPoint presentation, you can post your album to the Web or email it to friends and family, who can view it using PowerPoint or free viewer software.

If you're using PowerPoint 2000, you'll need to download a wizard (in PowerPoint 2002, the album feature is built in and works a little differently). When you've downloaded the file *album.exe* [at office.microsoft.com/downloads/2000/album.asp], simply double-click on it, and it will install itself. If you're using PowerPoint 97, unfortunately, you can't use the wizard. However, with a bit of imagination and some PowerPoint skills, you can create a similar result, using the images here as a guide.

Starting your album



You can build a multi-page photo album with PowerPoint 2002's Photo Album tool.

If you're using PowerPoint 2002, start a new blank presentation and choose Insert, Picture, then New Photo Album.

If you're using PowerPoint 2000 with the second installed, choose File, New, select the General tab, click Photo Album, pick in the list, and click OK. You will see a Photo Album dialog box appear (it's basically the same in both versions).

The images you add to your album can come directly from your hard disk or you can scan or download them into the Photo Album tool from a scanner or camera. This latter method is not recommended, however, as PowerPoint doesn't offer you the ability to easily edit or crop images. So, plan to download or scan images into your graphics software first, edit and crop them there, save them to your hard disk, then select images from the disk in PowerPoint.

To add images, click the File/Disk button and locate the image files on your disk. Hold the Control key as you click each image in turn to select it, then click Insert to add the images to the dialogue. Once in the list, you can arrange the images in the order you want them to appear, using the up and down arrows.

Choosing a layout

The default album layout displays one picture on a slide with the image used to fit the slide and no fancy options—at least plain and laudable. However, you can choose other options to include more photos per slide (one to four) and a page title. You can also add text blocks in place of one or more of the images on a page.

Select your preferred option from the Picture Layout dropdown list (notice that, when you do this, the small Preview window to the left of the list shows a thumbnail diagram of the slide as it will appear when created). We recommend you use one of the "with title" options—the one-photo and four-photo per-page options will be best for images that have a landscape orientation, and the two-photo per slide option if images have a portrait orientation.

If any of your photos have been scanned or downloaded sideways, select them in the list, then use the Rotate Right or Rotate Left button to reorient them. If you're using PowerPoint 2002, you'll also notice that there are buttons for increasing and decreasing image contrast and bright-

ness. Once you've chosen a layout (other than the fit to slide option), the Frame Shape (Frame Style in PowerPoint 2000) options will be enabled. The options include beveled and rounded rectangles, which are both rectangular but have different ridges, and an oval shape that will crop part of your image. There are three other rectangle options that include small corner markers that look like photo corners used in a "real" photo album. You can choose one of these options, or just use the default frame for a plain look.

Adding journaling boxes

To add some text to describe the contents of the pictures, both Album tools include an Insert Text Box button. Click it once to add a single text box, or multiple times to add multiple text boxes. Each text box will be the same size as the photos and it will take the space of one photo. You can add as many as you like and use the arrow buttons to move them into position in the photo list.

So, for example, if you have a two-photo per page layout, you could start with photos with text boxes, so you'd effectively have one photo and one text box per page. Likewise, adding one text box for every three photos in a four-photo per page design will place three photos and one text box per page. You can also use a text box to fill an empty space on a page.

For now, though, add only the text boxes you need (we suggest at least one per page) and move them into position as they'll appear on the correct pages.

Another option is the page background that you can add by choosing a design template for your album. Click the Show button to the right of the Design Template option and browse the special Photo Album templates on your disk. If you don't see anything you like (and they're a pretty bland lot), you can use any other design template on your disk. The trick is to find the templates. You can use Start, Find, then Files or Folders to search for them (they're POT files), or try Program Files/Microsoft Office/Templates/Personalization Design folder. Click the template you want to use and click Select.

The Captions follow All Pictures option places the image's file name in a

box below each picture. This might not sound like an impressive option, but it does give you a pre-designed and positioned box that you can edit later. If you plan to add a brief title for each image, select this option.

Finishing touches

At this stage, you will be just about finished with the Photo Album dialogue and ready to create your album. Click Create to create the photo album. PowerPoint 2000 will display a warning stating that you won't be able to return to this dialogue to make changes later on. This isn't a huge problem as the photo album is a regular PowerPoint presentation anyway, so you can make changes to it using PowerPoint's tools. In any case, if you make any significant changes to a PowerPoint 2002 album, such as changing a photo size or moving an element, you'll lose those changes if you go back to edit the album. So, you're best advised to use the Photo Album tool as a starting point for creating the album but to plan never to return to it and use PowerPoint's own tools instead.

Before you make changes, browse through your album to become familiar with how it looks. Plan the changes and edits you'll want to make. If you've totally brainstormed in your head (and if you're using PowerPoint 2002), choose Format, then Photo Album to return and make the required changes, then choose Update.

Once you've planned the changes you want, you can start to make them. Add a title for each image by clicking its caption box and typing in a short title. Click in each text box and add the descriptive text for the page—this will help you remember what is important about the photos and will help your viewers to understand that too.

Like any PowerPoint presentation, you can make changes to the page background by choosing Format, Slide Design, then selecting Color Schemes or Design Templates from the Task Bar options. If you're using PowerPoint 2000, choose Format and then either Slide Color Scheme or Background, or Apply Design Template depending on what you plan to change. You can choose to make

Continued on page 56



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Quick Tips

Selections in PaintShop Pro

Making selections quickly and accurately is the first step in editing in PaintShop Pro. Here are some selection tips:

Select an area When you need a 300x100-pixel selection from an image, don't load the size off the status bar; instead specify the size you want by clicking the Selection tool and choosing the

rectangle selection. Now double-click the tool to open the Select Area dialog. Type 100 as the height and 100 as the bottom values (Right, Left and Top at 0), and click OK. A 100x100-pixel selection will appear in the top-left of the image. Click the Move tool and drag the selection into position with the right-mouse button.

Save a selection You can save a selection inside an image's Alpha channel by first making the selection, then choosing Selections > Save to Alpha Channel, and clicking OK. Next, give the channel a name. Save the file in a format that saves channel data (PaintShop Pro's .JSP format, for example). You can then reload it anytime by choosing Selections, then

Load from Alpha Channel. Use the Selections, Save to File option to save selections for use in other images.

Freehand selection The freehand selection tool can be used to select an object that has very clear edges. Select the tool and, from the Tool Options palette,

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Microsoft launches Tablet PC

By Christine Wolewski and PC Staff

Microsoft (www.microsoft.com) seems confident its Tablet PC will revolutionize the workplace. At the product launch in Times Square in early November, the company said that, in five years, it expects most portable PCs will be tablets.

"This is both a business environment change and a technology change," said Microsoft Canada president Frank Gregg.

The Windows XP Tablet PC Edition combines a portable PC with a touch-sensitive screen that can be written on as if it were a notepad. Effortsoft product manager for the Tablet PC, referred to it as an evolution of the notebook PC.

The Input Panel gives users the option of entering information into their Tablet PC via an onscreen keyboard or with a digital pen using the Writing Pad. The digital ink is treated in text using handwriting-recognition software. The user can format the text and conduct searches on handwritten text documents. Matches in handwriting can be traced by



Microsoft chairman, Bill Gates, at official U.S. launch of Tablet PC in New York. New devices using the platform include the Fujitsu Stylus 71 (left), and the Compaq Tablet PC 3000 (here, Hewlett-Packard Edition, right).

using the opposite end of the digital pen. The Ink feature is compatible with all Windows XP applications, allowing users to insert link comments into Word documents, PowerPoint presentations,

can be annotated, and handwritten Tablet notes can be emailed via Outlook. However, if the email recipient doesn't use Ink-compatible platforms, the note file has to be sent as a compressed

TIFF or Web page. Microsoft says it expects a Journal Viewer will be released in December to notify this. The application will be available as a free download from Microsoft's Web site.

The Tablet PC comes in two formats: all include a keyboard. A convertible format looks like a normal notebook PC, the key difference being that the screen can be rotated and flat to convert to tablet mode. The slate format consists of a detached slide that a keyboard can be attached to. This type of Tablet PC needs to be docked to access a keyboard or mouse.

Deemed by Microsoft as "the first new device of the digital decade," the Tablet PC is the first in a line of products to be launched shortly. Microsoft has partnered with eight companies, including Toshiba and Compaq, to offer a variety of Tablet PCs and related applications.

Hewlett-Packard

Hewlett-Packard's contribution to the new platform is the Compaq Tablet PC PC1000, which it previewed at

(Continued on page 6)

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Microsoft launches Tablet PC

Continued from page 63

Microsoft's New York branch

The ultra-thin device can be used alone or with a full-size keyboard. A flexible docking solution also allows users to place the Tablet PC in a vertical, convenient position to write on the screen while at a desk, according to HP. The clock can

also accommodate a second monitor and the TC1000 screen itself can be viewed at portrait or landscape mode.

The tablet of the TC1000 is 2 cm (3/8 in.) thick and weighs in at 1.35 kg (3 lb.). It's powered by a 1 GHz Celeron TM900 processor, with a choice of hard drive size (up to 60 GB), Nvidia GeForce Go 200 graphics card, 10.4-inch TFT display built-in 800,115, and USB 2.0 connectivity. The device also incorporates non-programmable launch buttons and a pop dock. It has an estimated retail price US\$1,899 and up (depends on configuration). Price does not include dock.

based company, Fujitsu Canada was natural hardware partner for Microsoft's Tablet PC platform. On the day of the OS launch, Fujitsu unveiled the Stylus ST Series Tablet PC.

Fujitsu Stylus ST series Tablet PC

Being an old hand at developing pen-

like HP's device, the Stylus ST is a slate-format device that can be used alone, with a keyboard, or as a desktop computer with a docking station. It weighs 1.44 kg (3.2 lb.) and is 2.2 cm (3/8 in.) thick.

It uses an 800 MHz Mobile Intel Pentium D low-voltage processor, with 256 MB SDRAM (768 MB maximum) and 20 GB or 40 GB shock-mounted hard drive, and has a 10.4-inch XGA TFT display. It includes Ethernet, USB 1.1, infrared, and FireWire connectivity, built-in modem, PC Card slot, and lithium ion battery. Built-in 802.11b wireless connectivity is optional. The optional dock includes all of the peripheral connection ports, as well as a modular bay to accommodate an optical device, such as a DVD/CD-RW drive. It also has several one-touch application-launch buttons.

The Fujitsu Stylus ST Series has suggested list price of \$3,899 or \$4,199 with the docking station bundle (includes CD drive, keyboard, and mouse).

Alias SketchBook Pro for tablet PCs

Though not commercially available until early 2003, Toronto-based Alias Wavefront (www.aliaswavefront.com) has unveiled its first contribution to the Tablet PC platform, which was launched by Microsoft in early November.

The company says Alias SketchBook Pro will transform a Tablet PC device into a digital sketchbook, allowing users to sketch and annotate images.

With Alias SketchBook Pro a user can switch between brushes, quickly undo and redo, merge image layers, and integrate digital sketches into other Windows XP applications.

The company says the application is intended for both business users and graphic professionals, and draws on tech-



nology developed for Maya and Softimage—its professional graphics applications.

Alias SketchBook Pro incorporates production quality tools, including pencils, markers, brushes, and airbrushes that respond to pen pressure, a wide selection of primary and secondary colours, via an

easy-to-use colour wheel.

Images—from photographs to high-resolution technical drawings—can be annotated and marked. Sketches can be easily managed and organized into a presentation with feedback instantly added to the annotation layer.

The application also includes the Netrix Remus user-interface, which accommodates natural hand movements to select command options—without the need to hunt through traditional scroll-down menus.

A free introductory version of Alias SketchBook Pro can be downloaded at www.aliaswavefront.com/sketchbook or www.microsoft.com/tablets.

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Year-end for entrepreneurs

Continued from page 52.

your year-end work done more quickly than ever before. In order for that to happen, however, you have to be prepared to do a little work up front.

If you haven't already done so, that work starts by picking an accounting system. For many small businesses, it could be something as modest as Microsoft Money, Intuit Quicken, or something a little more "professional" like Computer Associates' Simply Accounting or Intuit QuickBooks. These are inexpensive, easy to use, and broadly supported by the country's major banks.

Online banking is now a reality for many small businesses.

It offers a great way to extract the information you need to quickly build a comprehensive view of your finances.

The support of banks becomes important quite quickly when you sit down to the usually daunting task of entering your financial data for the year into your accounting system.

Online banking is now a reality for many small businesses. It offers a great way to extract the information you need to quickly build a comprehensive view of your finances. All of Canada's major banks (and most credit unions) let clients look up details of transactions on their accounts online going back a number of months.

If you bank with TD Canada Trust, for example, you can download any month-

ly statement in Money, Quicken, QuickBooks, or Simply Accounting data formats—or even as a comma-separated CSV file that can be imported into most spreadsheets.

You should be able to go back up to six months in retrieving those statements online and export the data contained within them to your chosen accounting application.

Likewise, most credit card companies in Canada also offer the ability to view print statements online and download details of those statements in a variety of data formats.

Of course, if you are starting from scratch, you will undoubtedly have a fair amount of work to do in setting up any computerized accounting system, as you work to ensure that you have all the necessary categories and enter the details of each expense and cash transaction. But that can't be helped. At least the availability of online statements can assist you in quickly bringing your books up-to-date.

Don't forget, however, that you'll need to ensure that your real-world filing keeps pace your increasingly organized electronic information. Whether you are submitting expenses to a client or claiming a tax rebate, you will still need to be able to show receipts and produce paperwork.

Having this in electronic form just means you will be able to calculate and analyze financial information more quickly.

Moving forward

In all your zeal to ensure that you have a comprehensive view of the past year, don't lose sight of your goal in doing so: to have an even better year in the next 12

months. And that should be a realistic goal, because you will discover a great deal about how your business spends and makes money by being able to analyze the information you enter into your accounting system.

If you are smart about how you use that information, you'll have a chance to discover even more. And that's because you will be able to link pieces of information that you might not normally think to connect.

If you can quickly pinpoint the amount of revenue attributable to each customer in a given year it, could help you determine which are helping keep you afloat and which are holding you back.

Do you know, for example, who your most expensive customers are? Every small business has them. They typically require lots of time on the telephone or

in-person, yet may yield little in the way of revenue.

If you can quickly pinpoint the amount of revenue attributable to each customer in a given year—and the costs associated with servicing the needs of that customer—it could help you determine which are helping keep you afloat and which are holding you back.

Likewise, being able to quickly conduct analysis of bank charges, long distance phone rates, mobile phone costs, office supply costs, and so on will help you make more informed decisions about how you manage your small business in the coming year than you did in the year past.

A less taxing task

Of course, the big advantage in all this will come at tax time. Not only will your accounts be categorized that you now have so much financial information at your fingertips, but the improved "real-world" filing you will have initiated alongside the development of this information should make tax or job job much easier (and hopefully cost you less). □

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Wireless waves and wares

Custom and house rules 56

card, outside your computer. While we've seen similar technology before on Abu's Stereo line of GeForce cards (known on the Stereo as OTEES), the new GeForceX design also adjusts the speed of the fan depending on how hard the card is working: when you're using it full-tilt in a 3D game, it will be one of those damn heavy ones that the graphics component, it will scale back the fan speed, resulting in a lot less ambient noise. (Nvidia refers to it as "silent," though to be fair it's only silent when the fan is spun down.)

Many large-scale Nvidia partners have already signed up to manufacture GeForceFX cards, including Asus, PNY, and Gainward, and the technology will be finding its way into high performance gaming systems by companies like Alienware and Canada's own Vindoo PC.

Staphylinus rufus var. *gracilis*

Speaking of Wondoo, the Calgary-based company has just announced that it will be storing the ranks of notebook makers.

facturers. The new Woodco M-Class is designed as a mobile gaming machine.



featuring Pentium 4 processors at speeds up to 3 GHz (using desktop processors with a special cooling system that is a hybrid of liquid and air cooling). The graphics component in these new machines will be the GeForce 4 MX mobile GPU. As with other Voodoo products, the M-Class will be accessible at the company Web site (www.nvidia.com), including a choice of several different vibrant colors.

Tandem stands up the world of LCD

While LCD flat-panel monitors are making huge inroads into both the office and home, most haven't been ideal for

nation video. With the release of the FP551, Besta puts high-quality motion-video capabilities into a flat-panel design at an attractive price. The FP551 features a response time of 16 ms, which allows up to 63 frames per second without having to worry about the quality of the image. The screen also features 450:1 contrast, and a maximum 500 nits brightness, which can be adjusted to two different choices when that level of brightness is not required.

The EP590 monitor is also designed with style in mind, with a bezel that incorporates a pair of 3-Watt speakers and SRS sound soft-touch buttons, and slightly raised screen. The top of the bezel can accommodate an optional

photo card reader for CompactFlash, SmartMedia, and SD/MMC cards; when digital media is inserted, the monitor will display image thumbnails. There will also be an optional TV tuner available for the FP591.

While there will also be other monitors from BenQ featuring the 16 ms response time, the impressive thing with this one is that it will be available for about US\$300, even with the high-quality motion video and the built-in audio components.

Storage in key



Portable storage is a product category that seems to be growing exponentially, with the USB storage key sector exploding even faster. During the first day of

Continued on page B8

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Wireless wires and wires

Continued from page 85

In the show, we saw a number of USB keys, including one of the biggest drives of the technology, DataDisk, which has just introduced a smaller version of its popular key with the ADM7 processor onboard (following the key to be used as a boot device, and allowing applications to run directly from the key when it is inserted into a PC's USB slot).

Image, famous for its Zip technology, has also gotten into the business, using DataDisk technology, but under the Image Mini USB Drive brand name. DataDisk products will be available initially in 16 MB, 32 MB, 64 MB, and 128 MB capacities—with 256 MB and 512 MB capacities on the horizon. The Image product is now available in 64 MB and 128 MB capacities.

Companies that also offer flash-based products are also getting into the game. Laser Media has just announced a USB key that is the first to use the 480 Mbps USB 2.0 bus instead of the 12 Mbps USB 1.1 interface and by other manufacturers' current models. This

boost in speed means the key can even be used for streaming multimedia.

And Intel's SafeDisk has its own take on the technology in the Cruiser (which we've previously seen), which is slightly larger than the others, but features a non-volatile/upgradeable Secure Digital card inside. This format allows the user to quickly convert their digital contents SD card into a USB drive, for use on any compatible PC.

G2 Wireless gets a new standard

For the last few months, when you talked about wireless networking, you had two main technologies to choose from: 802.11b, the choice for mainstream networking, with a top speed of 11 Mbps or 22 Mbps on 2.4 GHz bandwidth, or the slightly cheaper 802.11a with a maximum throughput of 54 Mbps on the 5 GHz bandwidth, but which tends to have a degraded signal when there are walls in the way. The new standard is the long talked-about 802.11g, which manages to deliver 54 Mbps over the 2.4 GHz bandwidth, while maintaining backwards compatibility with older 802.11b

network components.

The advantages of 802.11g should be obvious to anyone who's deployed an 802.11b network. It allows for the potential of a faster network without making your old components obsolete. Obviously, any older components would only run at their maximum speed, but with an 802.11g access point, any 802.11b enabled PC would be able to access the outside world the times faster than first generation 802.11b networks and not be limited by walls (the shorter wavelengths on 5 GHz equipment effectively shatter the range of the 802.11a hardware).

New 802.11g products from some manufacturers are expected to be available in the U.S. by the end of the year, so should be available for purchase in Canada by January of 2003.

While most of the usual networking companies are expected to participate, we saw early models from Linksys and Buffalo Technology. Products using 802.11g technology will feature a slight price premium over those using 802.11b, but only slight. Linksys ex-

pects that an 802.11g router will only cost \$10 more than a wireless router using 802.11b.

Z Board makes keyboard change a snap



While there were a number of Canadian companies in attendance all over the show floor this year, one of the most interesting new technologies appeared in the Canadian pavilion. Vaughan, Ont.-based Ideance Inc. rented a booth to show off its new Z-board technology. The Z-board is a modular keyboard system consisting of a base unit that plugs into your PC through the usual PS/2 port, and modular full-sized keyboard components with application-specific

Continued on page 78

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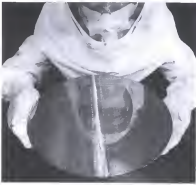
Say hello to Hyper-Threading

By Sean Carralliers

Irfid has been talking about introducing Hyper-Threading into its consumer line of processors for much of the past year. We actually heard about the technology during a briefing at Macworld's 2002 WinHEC conference back in May. That technology has finally hit the streets, with Intel announcing the release of a 3.06 GHz version of the Pentium 4 processor with Hyper-Threading support built in.

The concept behind Hyper-Threading is pretty straightforward: before this development most desktop processors worked as a single unit, and multitasking was achieved by doing out tiny shares of the same processor to a number of different applications in rapid succession. Hyper-Threading divides a single processor into two discrete processing pathways, each of which then subdivides how it handles its tasks in the same way old processors used to.

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Seeking and supporting the elusive Linux desktop



If you follow tech news, you've likely heard all of the complaints: Linux isn't ready for the desktop, not enough software, too confusing to use; and so on. Well, in some ways Linux might not be ready for the average

desktop user, but that's not a debate I'm interested in at this point. If you want Linux to function as your only desktop environment, the key is knowing what software is available. The complaint that there isn't enough just doesn't hold water anymore.

The major programs

Let's start with the big one, the office suite. There are an amazing number of office suites available in the Linux world these days, but one that's taken over by storm is available from OpenOffice.org (www.openoffice.org). This suite is available in 27 languages and contains: Writer (word processor), Calc (spreadsheets), Draw (art), and Impress (presentations).

When you need to work with images of any sort, and a draw program isn't enough for you, it's hard to find a feature that isn't in the GIMP (www.gimp.org).

If you need to trade documents with Microsoft Office users, OpenOffice.org may or may not fit the bill. Your best bet would be to experiment with some sample documents and make sure they convert back and forth from program to program. Heck, if you like OpenOffice.org, you can use the software under Windows, and even even on a Mac, too.

Continued on page 76

Apple updates notebook lines



Right before the start of the all important holiday shopping season, Apple has introduced new consumer portables in hopes of boosting sales in the sluggish computer market.

Last month, Apple posted its first quarterly net loss in several years, so its introduction of new models that are cheaper than their predecessors in the past, Apple has kept the price steady but bumped up the processor speed. Unless new models included significant feature upgrades or redesigned exteriors, the prices haven't usually



changed. The new iBooks have faster CPUs, better video cards, and are \$300 cheaper than the models they replace. The RAM configurations are unchanged at 1GB MB in both 12-inch models and 256 MB in the 14-inch iBook. The hard drive changes from 30 GB to 30 GB on

the 12-inch combo model (the base model is still at 30 GB), and is 30 GB on the 14-inch iBook.

The video card and CPU are the biggest upgrades—a significant improvement for gamers. Previously, the iBooks had Radeon Mobility 7000 chips with 16 MB VRAM while the PowerBook Titanium had a Radeon Mobility 7500 with 32 MB VRAM. All three iBooks now contain the 7500 card, although the base model has only 16 MB VRAM. The 12-inch and 14-inch iBooks models both get 32 MB of VRAM—a significant boost. The 7500 with double the VRAM results in better OpenGL performance, which improves game frame rates and also speeds up Quartz Extreme.

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Apple updates notebook line

Continued from page 71

in Mac OS 10.2.

The CPU speed boost in a modest 166 MHz—no 200 MHz and 300 MHz. The processor is still a G3 though, so don't expect OS X to run as fast as it would on a G4 eMac or iMac. The Radeon Mobility 7500 is arguably a better card than the GeForce 2MX in the iMac and eMac line though, so the iBook should still hold its own against ancient Apple desktop consumer Macs for overall system performance.

For the first time, an Apple portable ditches under the USB-600 price point, making it cheaper than even the base eMac model. In Canadian funds, the iBook models now come in at \$3,399 to \$2,399. At present, the cheapest desktop Mac you can buy is the eMac for \$1,499. Though it's 100 lbs, the low-end iBook model is much more basic than the others, with a 33 GHz hard drive, CD-ROM drive, 200 MHz G3, and only 16 MB of VRAM.

The higher end 12-inch and 14-inch models are more capable—with the larger hard drives, double the VRAM,



better graphics card and CD-ROM/DVD-ROM drive. But, even with double the VRAM and a better graphics card, they are not capable of driving an independent external display, also known as spinning.

Any display plugged into the video out port on an iBook is limited to mimicking only, perfect for presentations but it doesn't allow you to extend your desktop. If you need monitor spinning on your Mac network you still have to shell out for a G4 PowerBook.

All iBooks are still using a standard 100 MHz bus and the maximum amount of RAM maxes 4GB MB. If your needs are simple—email, Web

Note iBooks and PowerBooks specs									
Model	CPU	RAM	HD	Video card	VRAM	Screen	Optical drive	Price	
iBook	200 MHz	128 MB	20 GB	Radeon 7500	16 MB	12.1-inch	CD-ROM	\$1,999	
iBook	400 MHz	128 MB	30 GB	Radeon 7500	32 MB	12.1-inch	Combo	\$2,399	
iBook	600 MHz	256 MB	40 GB	Radeon 7500	32 MB	14.1-inch	Combo	\$2,999	
PowerBook	600 MHz	256 MB	40 GB	Radeon 8000	32 MB	15.2-inch	Combo	\$3,499	
PowerBook	1 GHz	512 MB	60 GB	Radeon 8000	64 MB	15.2-inch	Combo	\$4,499	
PowerBook	1 GHz	512 MB	60 GB	Radeon 8000	64 MB	15.2-inch	SuperDrive	\$4,799	

browsing, and word processing—the base iBook is a steal, especially if you already have a desktop computer. For those who want to use an iBook as their only Mac, are interested in gaming, video editing, or more processor intensive tasks, the \$2,899 12-inch combo drive model is the way to go. For \$500 more you get double the VRAM, faster CPU, and an extra 10 GB of storage.

The 14-inch model gives you only another 128 MB of RAM, and of course extra screen space, but the resolution remains unchanged, at 1,024x768. On such a large panel, Apple should really consider a higher resolution. While 1,024x768 looks sharp and bright on a 12-inch screen, it can look a bit coarse on the 14-inch screen. Still, for those

upgrading from previous G3 PowerBooks and who are used to a large screen, the top of the line iBook is an attractive option, and its new price seems very reasonable. Another note: because of the 14-inch iBook is an extra hour of battery life—an estimated six hours, versus five hours for the smaller model.

Overall, we had to pick a favorite, it would be the 12-inch iBook with combo drive. For just over \$2,000, it's a great machine that weighs in at less than 2.25 kg (5 lbs), can play DVDs, burn CDs, play games, edit videos, and handle almost any home or office task.

We assumed the new iBooks would be cosmetically identical to the existing line, and the 800 MHz models are the

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\$4,599 700 MHz iBook, on the other hand, looks quite different. It's hard to put down just exactly, but the grey plastic seems cheaper, and the white part is no longer clear plastic that has been painted white on the inside, it's just white plastic. It looks a lot of the same that gave it the "ice book" nickname.

Note that all iBooks are AirPort ready with a built-in antenna and have the following: two USB and one FireWire port, 56Kbps modem, 10/100 Ethernet, audio out, and video monitoring.

PowerBooks get DVD burner

The new PowerBook models include one feature that surprised us all, a built-in DVD-burning SuperDrive. In other respects, though, the upgrades to this line are pretty standard.

Instead of parting in more features, like built-in Bluetooth or a multi-button trackpad, Apple is choosing to refine the PowerBook with each new model into the perfect productivity machine. Each revision from a few more bags, adds a bit more speed, but generally doesn't risk risks with its winning formula.

The new 867 MHz and 1 GHz PowerBook G4 revises everything that made their predecessors great. At 3.54 cm (one inch) thick when closed, and weighing in at 4.0 kg (8.8 lb), they are slimmer and lighter than many desktop replacements in the PC world.

This upgrade primarily affects price, not speed and graphics capability. Each model is 200 MHz faster and 330 cheaper than its predecessor. The choices are now an 867 MHz G4 for \$3,299 or a 1 GHz G4 with SuperDrive for \$4,799. On the low end, you still get 256 MB of RAM but the base hard drive is now 40 GB. The higher end models include 512 MB RAM and a 60 GB hard drive, and AirPort cards are still included on the top PowerBooks and are optional on the cheaper models.

There are only two retail models, but Apple lists a third on its Web site that's sure to be popular. While these new PowerBooks are the first to include a SuperDrive, it does add to the weight of the machine, and not everyone needs to burn DVDs on the road. For this reason, Apple is offering a CTO (configure-to-

order) 1 GHz PowerBook G4 without the SuperDrive for \$320 less.

The video cards on these new machines have been upgraded from a Radeon Mobility 7500 to the Radeon Mobility 9000—almost the same card as the one found in the newest dual processor towers. The 9000 can handle much higher frame rates than the old card, and has new features that are current with emerging 3D technologies.

For example, the 9000 features hardware transforms and lighting, as well as the ability to render six textures in a single pass—which means these PowerBooks can handle the newest games, including the yet-to-be-released Doom III. This is the first time the video card in a PowerBook is as good as the one in Apple's top-of-the-line desktop.

The 1 GHz PowerBook has 64 MB VRAM, another first for Apple, while the 867 MHz model has to make do with 32 MB (the same as the previous generation). All PowerBooks retain the same complement of ports, with two USB, one FireWire, a 56Kbps modem,

10/100/1000 Ethernet, S-Video out, and DV.

You can drive an Apple digital LCD using the Apple DVI to ADC adapter (available separately for about \$250). With 64 MB of VRAM and a Radeon Mobility 9000, the 1 GHz PowerBook could even drive a 23-inch Cinema Display with enough VRAM to run Quartz Extreme on both screens.

But speed on these new books remains at 133 MHz, and the RAM is still regular PC133 SDRAMs. Apple could have made the switch to DDR as they did in the towers, but that would have generated more heat, drained more battery life, and added to the cost without a very noticeable performance benefit. In testing, the DDR-equipped G4 towers have cut, thus far, shown much benefit from the newer, greater RAM over the older PC133 models. The PowerBooks do gain 1 MB of DDR Level-3 cache though, which in addition to 256 KB of on-chip Level-2 cache should give a single-CPU G4 tower a run for its money.

Continued on page 74

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Wireless wires and wires

Continued from page 28

a 600-MHz Intel Xscale processor, and 64 MB SDRAM, and the V350, with the same processor and a 15-inch LCD (1,024x768 resolution). Both run Windows CE for Smart Displays and feature integrated 802.11b wireless networking for connecting back to a Windows XP machine. The simplicity, along with a rechargeable lithium-ion battery designed to provide five hours of runtime. The V310 and V350 will be available for US\$999 and \$1,299 respectively.

Western Digital shows off concept drives
While we're waiting for the Serial ATA drives

to hit the market, Western Digital has found another way to speed up the world of hard drives. The company, which has recently introduced external drives using USB 2.0 or FireWire connections, was showing a number of customized external drives.

The drives inside were pretty standard, but the casing was changed, with clear top panels designed to show off special stamped metal top panels, engravings, and colored lights.

While these are more aesthetic changes, they do transform what are typically just metal boxes into a lifestyle product. While the designs haven't been finalized, they are expected to hit retail shelves early to mid 2003.

and for dominance.

TDK has just added to the list of technologies to keep straight with the introduction of the new DVD writer, which comes up DVD-RW/DVD-R with TDK-RW/DVD-R capability. This is especially interesting because of the fact that the plus RW camp and the minus RW camps (as they've come to be nicknamed by people in the industry) are theoretically on opposing sides.

It's a tricky move for TDK, because it brings the two best DVD burning technologies into a single product, a nice bonus if you're working in an office where both technologies have already been deployed. (Sony also has announced a drive that's capable of handling both rewritable formats.)

The Inki DVD Multiformat (model AHD-060126) will burn DVD-R at 4X, DVD+RW at 2.4X, DVD-R and DVD-RW at 2X, CD-R at 16X and CD-RW at 8X. It will be available in January. Price to be announced.

What's the flip?

While Microsoft is busy pushing the Tablet PC, there are competitors out there

with a still smaller form factor. While it was originally introduced in February, Tipt's *eightphase* is still worth remembering in all the hype over the Tablet PC. It runs a full Windows XP installation in a form factor that's barely larger than your hand.

The eightphase uses a 300 MHz Grade processor from National Semiconductor, and features 256 MB RAM and a 10 GB hard drive. It has a 6-inch color TFT display with 640x480 resolution and touch-screen input. In addition to the stylus that's included, it has miniature keyboard below the screen, and a nub style pointing device. For external connectivity, you can plug devices in via USB 3.0 slot, or the PC Card slot located along the top (which will handle removable storage as well as any standard PCMCIA devices, like wireless networking cards).

Because the eightphase runs Windows XE, it can do pretty much anything a full-sized desktop can do. Because it's running a 300 MHz processor, though, it will obviously do most of these things far more slowly, but it will also be far more portable. ☐

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TDK drive goes full route



The world of writable DVD can be a tad confusing to the beginner, as there have been at least three standards fighting it

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Input systems

Whether it's a matter of improved ergonomics, clearing desktop clutter, or being a slave to the coal factor, there are plenty of reasons to upgrade input peripherals. Here are a few new devices we think would be welcome additions to a loved one's desktop this holiday season.

Composite

It's a mouse you wear on your head—that's right, on your head. We first saw this about a year ago at Comdex Las Vegas, and it now appears to be ready for prime-time. Cymaze consists of two sensors: one that is placed on top of your monitor and the other on your forehead. The way you line up the sensors determines what happens on screen when playing a 3D game.

If you turn your head to the right, the view on the screen will move appropriately. If you move the two sensors further apart, you'll back up. While it's disorienting at first, once you get used to it it's a nice way to free up at least one hand for other tasks while gaming.

As with most game controllers, you have to set up profiles to use it with specific games (it comes with a handful of profiles already set up). The price may be steep, but for hardcore gamers, freeing up a hand may well justify the cost.

—Seven Corners

Endless Optical TrackMan

When it comes to mice, trying not to think of Logitech is hard. This company has built its entire business around better peripherals, including a number of innovative mouse and trackball solutions. Most recently, it has been focusing on a

couple of controller technologies—optical and cordless—and has finally brought both into the world of the trackball, a controller loved by a small but very dedicated group of computer users (myself included). The trackball is a great addition to any computer system. If you're a fan of 3D gaming, it allows for very sensitive, quick scrolling in all directions without having to worry about running off the edge of the mousepad.

The Cordless Optical Tachometer is designed for use in the right hand, only.

ing both the trackball and a scroll wheel at your fingertips. While the button layout takes some getting used to, it should be pretty easy to pick up. (Even better, all Logitech controllers are user-programmable, allowing you to set up the third and fourth button for commands you use often [cut and paste, for example].)

The Logitech Optical Webcam's receiver hooks into your USB or PS/2 port. The unit itself is powered by a pair of AA batteries. It's fully compatible with Windows 95 through XP (basic functionality ends



Windows 3.1 and DOS) and Mac OS 8.1 through 9.x.

—Sergei Chervachin

Wireless Optical Desktops: Free

If you're like most people, you probably fight with your mouse every so often as its cord gets caught on the edge of your PC, wrapped around your coffee cup, or tangled up with the keyboard cord and the other cables nesting around your desktop. If you regularly find yourself in this situation, it's probably time to go wireless.

The Wireless Optical Desktop Pro has an audio frequency (RF) connector that hooks to your computer via PS/2 or both PS/2 and USB ports (the mouse connector has an adapter but the keyboard is hard-wired for PS/2 ports only). The keyboard has an ergonomic design that splits the keys into two main sections, so you can hold your hands in a more natural position. It also sports a number of quick-launch keys and multimedia-specific buttons along the top (who says a pro can't have fun, too?).

The wireless mouse has a scrollwheel and an optical sensor so it can be used on almost any surface without a mousepad. It's also ambidextrous, so it can be used comfortably in either hand. Both the keyboard and mouse require two AA batteries each (included). The whole shebang is compatible with both Windows (95, 98, ME, 2000, and XP) and Mac (8.6 through OS X 10.1 and later).

If you don't want the split keyboard, you can save a bit of money with the standard Wireless Optical Desktop (it's only \$130). On the other end of the spectrum, early adopters can try out the

Continued on page 81

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Online memorial explores brother's life

By Peter Rupper

What happens when we die? Usually that question leads to a discussion of the soul and the possibility of an afterlife, but it can have a different meaning: how are we remembered by the living, and does that memory change?

Those were some of the many questions plaguing artist Paul Levine in the aftermath of the death of his brother Richard, killed in a car crash on B.C.'s Sea to Sky highway in 1999. Levine struggled to make sense of this event, even going so far as to photograph his brother's remains in the morgue. "It was blurry, that period," he says by way of explanation.

The result of two years of gathering and assembling material in *Raising the Dead* (www.raisingthedead.com), an unsettling memorial web site that explores his brother's life and death. Not being a commercial project, the site can push the limits of Flash animation without having to cater to users with slow connec-



"At death people stop analyzing you and come to a conclusion. Those conclusions generate the myth."

tions or computers. The main interface shows a video clip of Richard welcoming the audience, played out on his grave-stone.

Instead of the usual stages of grief, the site offers four different ways to explore Richard: Politics, Romanticism, Nostalgia, and Myth. Each offers a different perspective on Richard's life, death, and what happens after, not so much in the sense of an

afterlife but his presence in our society. You can hear his outgoing phone messages, study his autopsy report, screen video of the funeral, view Flash animations based on dreams Levine had about Richard, and more.

One goal of Levine's project was to avoid the idealizing of the deceased. He specifically asked people to remember moments of conflict with his brother, whom he describes as a "controversial" person who "brought out conflict."

Having this much access to another person's life, especially after they're dead, can be disconcerting. It feels like attending the funeral of a person you barely knew and having to talk to the heavy relatives.

One of the most compelling places in a Flash animation recreating the fatal car accident, narrated in a matter-of-fact tone by Richard's four-year-old son. The boy was two at the time of the accident, and only knows his father through stories told by other people.

"To him, really, his father is a myth," Levine suggests. "At death people stop

analyzing you and come to a conclusion. Those conclusions generate the myth."

That myth comes to replace the person who is lost to the living. Levine seems to be as uncomfortable with his own creation as anyone. He isn't certain that his brother would appreciate how he has been memorialized.

"I think I have kind of abused my brother in making this memorial. It's disquieting to my family," Levine says. "I think [Richard] would be flattered, but he would also be disturbed."

Levine plans to take *Raising the Dead* offline in October 2003, one year after its launch, the period of mourning prescribed by Jewish custom. It will also be a reminder of how ephemeral Internet art is.

However, the site has already been archived by the Internet Archive (www.archive.org) project—a New York-based non-profit organization that supports the creation, preservation, discussion, and preservation of new media arts—giving it life even after Levine shuts it down. □

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KEYWORDS: child abuse; child sexual abuse; child welfare; child protection

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MICHAEL L. RAY

16. $\frac{1}{2}$ 17. $\frac{1}{2}$

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CSS selectors: Part I

Continued from page 58

<div>link to external resources as no return to the "outside" list.

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The word in this sentence that <div> identifies should be in green

<p>

The word in the sentence that <div>emphasizes should also be in green

<p>

<div>The sentence is in italics, and the <div>emphasized word should appear in italics

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When you view this code in your browser, you'll see that nested list elements are rendered in lower-case letters

</p>

You'll also see how the special universal CSS rule applies a different content value ("none") when <div> and <p> tags are applied within the same context, overriding the color when either appears separately.

</p>

Child and adjacent sibling selectors

Child and adjacent selectors are only one of

many CSS selectors available. Another type are known as "child" selectors. They are applied when an element is considered to be the child of some "parent" element. It uses a less-than (<) symbol between at least two Web elements.

List elements can be considered children of the parent ordered or unordered list tags. In a similar way, all displayed content on a Web page can be considered the child of the body tag. The child selector enables the Web author to specify that when a given child element appears after a certain parent element, it should be formatted in the way described. The following code sample provides two examples of this:

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Best of computer books 2002

Keith Schengill-Roberts

Every year I get several large boats-loads of computer books to review. Some years it is easy to come up with a list of the top books, but there have been times this year when I wondered whether or not I would have enough outstanding books to recommend by the end of the year. This year there seemed to be more and more by the numbers books that provided the basics and not much else, so my annual list included only five recommendations, instead of the usual 50.

I certainly can't claim to have read every computer book published this year, and this list reflects my biases and interests, but the following titles represent books I've picked up repeatedly. Any book that manages to stay on my bookshelf has got to be good—and these titles have all been "keepers."

Here, in no special order, are my picks for the best computer books of 2002.

Mac OS X Unleashed

At almost 1,500 pages, this behemoth includes all the material you expect to see in a guide to Mac OS X and plenty more. It is aimed squarely at the more experienced user who is not afraid of getting under the hood of this new operating system.

The first 400 pages are devoted to relatively basic material, which is arguably better covered in other beginner-level OS X titles. But the authors really get down



Mac OS X Unleashed

Authors: John Ray and William C. Ray
Publisher: No Starch Press
ISBN: 0-672-32229-1
Softcover: 1,494 pages
2002
Price: \$79.95



PHP Developer's Cookbook, 2nd Edition

Authors: Storing Hughes and Andrei Zenevich
Publisher: No Starch Press
ISBN: 0-672-32252-7
Softcover: 440 pages
2002
Price: \$29.95



Homepage Usability: 50 Websites Deconstructed

Authors: Jakob Nielsen and Mary Jane
Publisher: New Riders
www.newriders.com
ISBN: 0-7527-1823-8
Softcover: 216 pages
2002
Price: \$29.95



PC Hardware in a Nutschell, 2nd Edition

Author: Robert Ikin
Thompson and Barbara Thompson
Publisher: O'Reilly & Associates
www.oreilly.com
ISBN: 0-596-00251-4
Softcover: 260 pages
2002
Price: \$39.95



Web Database Applications with PHP and MySQL

Authors: Hugh E. Williams and David Lane
Publisher: O'Reilly & Associates
www.oreilly.com
ISBN: 0-596-00041-5
Softcover: 562 pages
2002
Price: \$39.95

and dirty when turn their attention to the BSD Unix core. If you're a hard-core Mac user who wants to get the most out of OS X, this tome has what you need.

I would have preferred that the basic material be dropped completely if only to keep the weight of the book down but it will serve the beginner with ambition.

PHP Developer's Cookbook, 2nd Edition

As I pored through this book, I couldn't get over the delightful feeling of finding new tips. The book structure is, essentially, here's a PHP function, a description of how to use it, and some good example code to work with. Sounds simple, yet it

has a lot of useful code, written by people who obviously knew how to get the most out of this scripting language, which is used to create dynamic Web pages.

About half of the book is devoted to basic language constructs and useful code snippets for beginners, such as how to manipulate strings of text, work with dates, deal with arrays and files, create classes, and use cookies. It then goes beyond the basics, looking at topics like interfacing with other programs and languages, working with LDAP and RPL, and a whole section it devotes to the Zend API, which allows users to create custom functions and extensions to PHP.

The "cookbook" approach works well, making it fairly simple for readers to take a basic code recipe and "tweak" it for their own needs.

Homepage Usability: 50 Websites Deconstructed

This book assesses Web sites of 50 organizations, including large companies, government and non-profit institutions, and news and Web portals.

The basic approach of the critiques is a couple of pages that introduce the homepage, and a rough breakdown of a very general criticism of how the page's "real

Continued on page 92

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U.S. Robotics

Ready. Set. Connect.

Wireless net- working basics

Keeping with the holiday spirit, why not share your high-speed Internet access? The following products make that even easier by offering both wireless and cable connections—a great solution for home or small office environments.



Gigabyte

With so many people heading to broadband Internet connections, it's no surprise that a lot of companies are coming out with broadband router products. They make it easy to connect multiple computers to the Internet using a single connection to the outside world.

Gigabyte's new Wireless Broadband Router (GB-BR402W) is a stylish little device, in a metallic blue plastic housing that can be mounted on the wall to eliminate clutter and for better data transfer and reception. The router has four 10/100 Ethernet ports on the rear for wired connections, as well as integrated 802.11b wireless networking, which will allow you to send and receive data at up to 11 Mbps almost anywhere in your house—unless it's made of solid concrete or something similarly dense. A parallel port on the back of the router allows you to share a printer among locally connected devices.

(either wired or wireless). The router ships with two Ethernet cables.

Of course, if you're going to have a wireless router, you'll need at least one wireless adapter. Gigabyte's LAN Card (GN-WE9812) is pretty much what you'd expect: load the driver onto your notebook, stick the card into the PC Card slot, configure your network, and away you go.

—Sean Connerth

US Robotics

A lot of uses, myself included, have a soft

spot for US Robotics because it was the technology we first used to connect to the Internet—remember 2,400 and 9,600 bps? With the switch to broadband, telephone-based modems haven't been on most people's minds of late, but USR is still a sure to keep in mind, thanks to its networking products.

One of the company's newest lines is its 802.11b-based wireless broadband sharing routers, which can be used with either cable or DSL broadband connections. This particular model (USR8021) has two

10/100 Ethernet ports for connecting wired devices, and it can handle many more wireless connections at up to 22 Mbps under ideal circumstances. There are two adjustable antennae on the rear of the device, as well as a portlet port, so you can share a printer between multiple connected machines, wired or wireless. It also features a reset switch on the front of the box, just in case you have to reboot the router. It ships with one Ethernet cable.

The card (USR822210) itself is a pretty basic 802.11b PC Card capable of 22 Mbps

connections. Just load your drivers, slot the card in, set up your network ID, and away you go. Both the router and card are backwards compatible with 11 Mbps technology (though, obviously, they'll only connect with 11 Mbps cards or routers at 11 Mbps).

Note: if you already have a broadband sharing device on your home network, US Robotics offers an access point, also at 22 Mbps, that will add 802.11b networking to your current network.

—Sean Connerth

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